



World Congress on Oils and Fats & 28th ISF Congress

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oils and fats essential for life
program & abstract book



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Welcome to World Congress on Oils and Fats and 28th ISF Congress, 2009. We have developed the Congress based on previous ISF programs encompassing the wide range of topics associated with edible fats and oils. A major addition has been several pre- and post-Congress workshops available to delegates covering deep frying, lipid oxidation and olive oil. This has allowed us to maximise the amount of technical information from the Congress in the brief period of time available.

I wish to welcome both local and international speakers. This broad group encompasses experts with many research interests as well as experts from industry who will provide delegates with an unlimited resource to further their understanding of lipids in almost any topic. Hopefully, new and old associations will lead to information and even future collaborations to help further scientific knowledge on lipids.

A symposium will be held on the last day which is focused on olive oil, diversity, quality and authenticity. Everybody is invited to attend and contribute and learn about the intricacies of olive oil. This will provide an opportunity to cover areas not discussed in the main body of the program.

I would like to thank our sponsors for making this Congress possible. The Australian Oilseed Federation, the Australian Olive Association and the large number of industries that took part have helped ensure the Congress will provide positive outcomes for everybody.

Thank you to the Organising Committee who designed the Congress and contributed personal time and expenses to make it happen. I also thank the Technical Committee who provided the input into program design, reviewing papers and posters and advice on the technical operations of the Congress. The time required of these busy people is significant and their contribution here has been invaluable and greatly appreciated.

This Congress is an opportunity to talk to many of the world's leading specialists and experts on all topics of lipid science. I encourage delegates to utilise these few days to gain from others and to share your knowledge. I hope that the Congress fulfils your expectations.

With best wishes



Dr Rodney Mailer
Congress Chairman

Congress Organising Committee

Dr Rodney Mailer – Industry and Investment NSW – Wagga Wagga Research Institute
Congress Chairman
Nick Goddard – Australian Oilseeds Federation
Lucky Inturrisi – Cargill Australia Ltd
Paul Miller – Australian Olive Association
Rosemary Richards – Bowman Richards & Associates
John Slee – Aus-Oils Pty Ltd

Congress Technical Committee

Olive Oil

Leandro Ravetti – Modern Olives (Australia)
Lanfranco Conte – University di Udine (Italy)

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Manohar Garg – University of Newcastle (Australia)
Sebastiano Banni – Università degli Studi di Cagliari (Italy)
Barbara Eden – Heart Foundation (Australia)

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Kerr Walker – Merrysystem Consultants Ltd (UK)
Elaine Booth – Scottish Agricultural College (UK)
Adrian Carpenter – Biodiesel Consultant (Australia)
Warwick Rush – Gardner Smith (Australia)

Aquaculture

Peter Nichols – CSIRO Marine Research (Australia)
Chris Carter – University of Tasmania (Australia)

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Greg Buzza – Nufarm (Australia)
Phillip Salisbury – University of Melbourne (Australia)
Allan Green – CSIRO Plant Industry (Australia)

Processing

Neoh Soon Bin – Soon Soon Group (Malaysia)
JS Rao – Riverland Oilseed Processors (Australia)

Lipid Chemistry

Laurence Eyres – The University of Auckland (New Zealand)
Rod Smith – Food Sciences Australia (Australia)

Oleochemicals

JS Rao – Riverland Oilseed Processors (Australia)
Mike Newton – Consultant (Australia)

Animal Meal and Nutrition

Edward Clayton – Industry and Investment NSW (Australia)
Denis M'Gee – Magi Solutions (Australia)

INFLUENCE OF LUPINS AND CANOLA SUPPLEMENT ON SHORT LOIN FATTY ACID PROFILES WITHIN GENETICALLY DIVERGENT FIRST CROSS MERINO LAMBS

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Australian consumers are becoming increasingly aware of the health benefits of long-chain omega-3 polyunsaturated fatty acids [LC-PUFA] - eicosapentaenoic acid (EPA), 20:5(n-3) and docosahexaenoic acid (DHA), 22:6(n-3). The most common dietary source of long-chain omega-3 is through consumption of seafood and fish oil supplements. Common Australian commercial crops of canola and lupin both offer good sources of LC-PUFA precursors, including α -linolenic acid [ALA, 18:3(n-3)] and their potential as animal feeds to manipulate LC-PUFA concentrations within animal meat is of great interest to the livestock and human health sectors.

This study investigated the LC-PUFA profiles of 38 first cross Merino weaner lambs sired by five genetically divergent rams supplemented with canola meal or cracked lupins at 1% or 2% of body weight feeding levels for 60 days. Results demonstrated that all animals had 'source' content of omega-3 (EPA+DHA) in muscle samples taken from the short loin (loin chop) equal to or greater than 30mg per 100g serve. 18 animals were in excess of 'good source' content of 60mg per 100g serve with a whole flock mean of 67mg/100g EPA+DHA. When docosapentaenoic acid (DPA) is added to EPA+DHA, only two animals do not reach the 'good source' content of long-chain omega-3. Supplement type significantly ($P<0.05$) affected the level of ALA, with canola meal-supplemented sheep producing 91mg/100g compared to 66mg/100g in lupin-fed sheep. Total saturated fatty acid levels also showed a significant ($P<0.05$) interaction with sex and supplement indicating that males fed lupins had the lowest levels of SFA 3860mg/100g compared to males fed canola which had 5180mg/100g SFA. Overall the mean long-chain omega-3 content (mg) per 100g for each breed was: East Friesian 75 mg/100g, Dorset 73 mg/100g, Coopworth 68 mg/100g, Texel 59 mg/100g and White Suffolk 58 mg/100g.

In conclusion feed supplementation markedly enhanced long-chain omega-3 content of Australian lamb. Level of supplementation, breed and type of supplement had no significant relationship with short loin content of long-chain omega-3 FA. However, when supplementing wethers and ewes with canola meal or lupins, attention should be paid to the significant interactions that exist between sexes and supplement type.